

BDE tutorial



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Loading the World

- Open a new world, with any template
- Save it in a directory that you can find again.
- First: After you have opened the file go into the "Layout" mode by clicking on the green button **Add Objects** (toward the middle of screen)
- Click **more controls**. Click **drop a dummy at the camera**. Rename the dummy 'originalPosition.'
To leave the layout mode, click **done**

Adding Objects

- The objects we will add are in the ocean folder in the web gallery:
OceanFloor, **Shark** and **LilFish2**
- OR in the local gallery, use the shark and lilFish from the Animal folder



How to add objects to your scene

- 1) First, drag the **oceanFloor** into your world
- 2) In order to add the **shark** and **lilFish2**: drag each into your world instead of clicking on add instance
- 3) As you drag each object in, BEFORE you release the mouse, hold down the shift key and move your cursor forward (into the scene) until you see the yellow outline box
- 4) If you still can't see your objects, drag the **oceanFloor** away from the camera. Move the fish up and then move your oceanFloor back

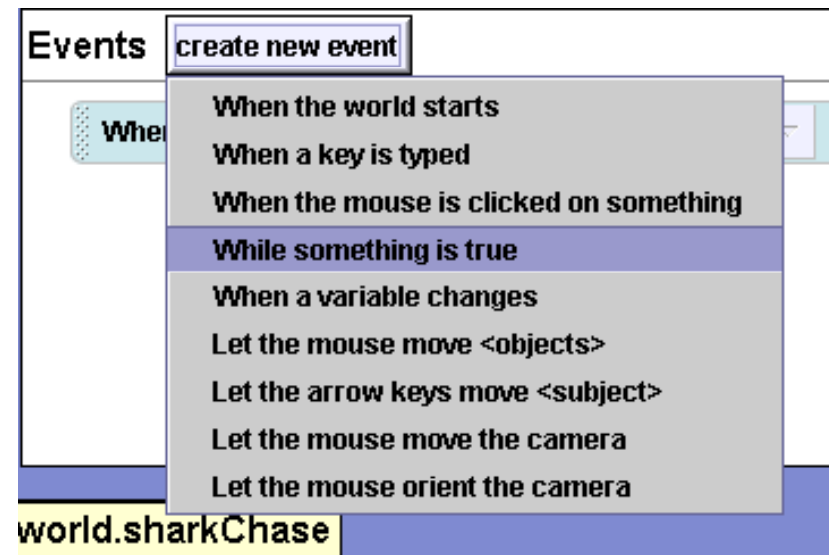
Writing the method

- Create a world-level method named sharkChase
- Drag the following instructions into the method:

The screenshot shows the Scratch IDE's method editor for a world-level method named `world.sharkChase`. The editor has a header bar with two tabs: `world.my first method` and `world.sharkChase`. Below the header, the method name `world.sharkChase` is displayed with the note *No parameters* and a `create new parameter` button. Below that, it says *No variables* with a `create new variable` button. The main area contains a stack of instructions under a `Do together` block. The first instruction is `Shark` `turn to face` `lilFish2` `duration = 0.25 seconds` `style = abruptly` `more...`. The second instruction is `Shark` `move` `amount = 0.25 meters` `toward` `target = lilFish2` `duration = 0.25 seconds` `style = abruptly` `more...`.

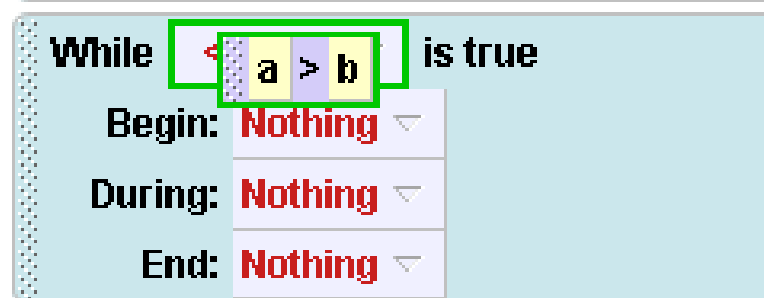
Creating a BDE

- Click on **create new event**
- Select **while something is true**
- This event is a while loop with three parts:
 - Begin,
 - During
 - End



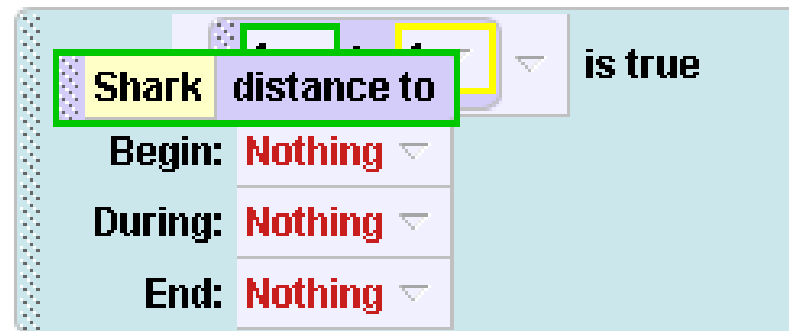
The BDE: the conditional

- The first step in writing a BDE is the conditional.
- We want this loop to run while the **shark** is more than one meter away from the **lilFish**.
- Click on world in the object tree and go to functions. Drag **a>b** on top of the **<None>**



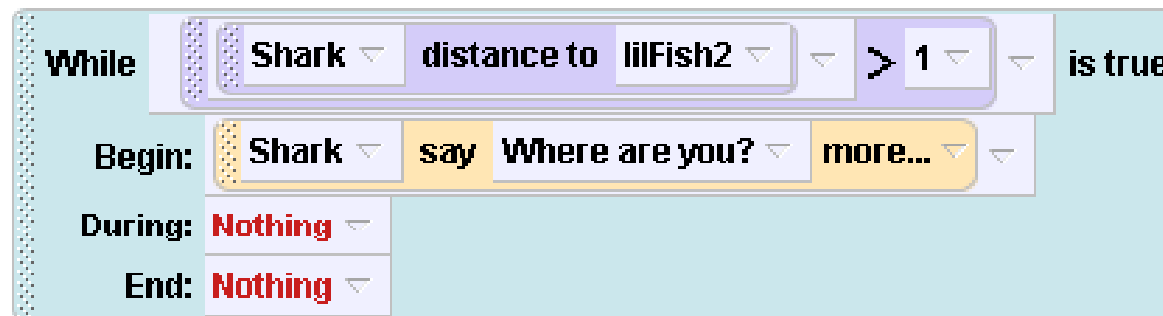
The conditional (cont)

- Select 1 for **a** and **b** (as placeholders).
- Click on **shark** in the object tree
- Click on the **functions** tab
- Drag the **shark distance to** function on top of the first 1. And in the drop down, select **lilFish2**, the entire **lilFish2**.



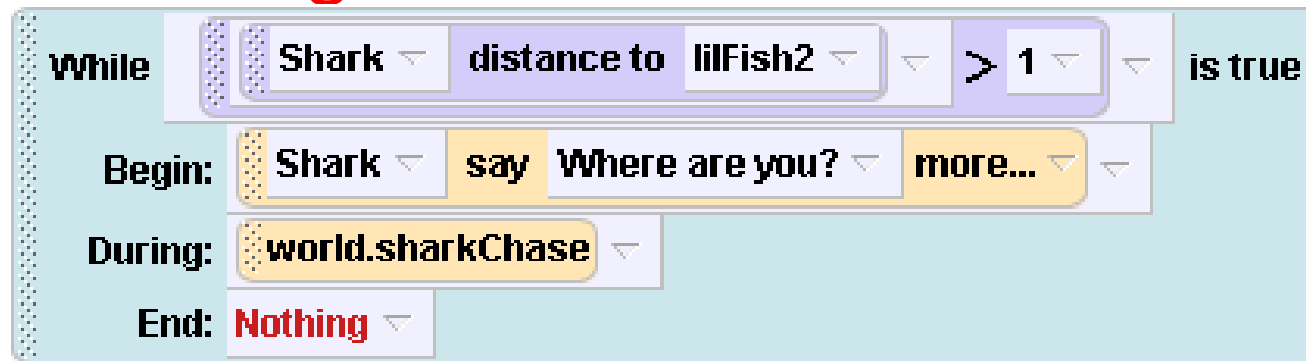
The BDE: the Begin

- The very first time this while loop is passed, we want the shark to say: Where are you?.
- From the object tree, drag the **shark** on top of the **Nothing** beside **Begin**.
- Select the **say** method and other. Type in: Where are you?



The BDE: the During

- Every time the while loop is passed, we want the sharkChase method to be called.
- Click on **world** in the object tree and click on the **methods** tab.
- Drag **world.sharkChase** onto the **Nothing** beside **During**.



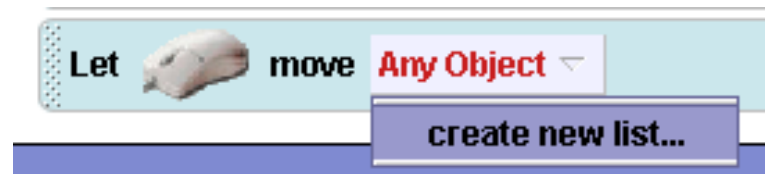
The BDE: the End

- The very last time the while loop is passed, when the shark is 1 meter away from the fish, we want the shark to say: Gotcha
- Drag the shark **say** method on top of the **Nothing** beside **End**.
- Select other and type in: Gotcha.



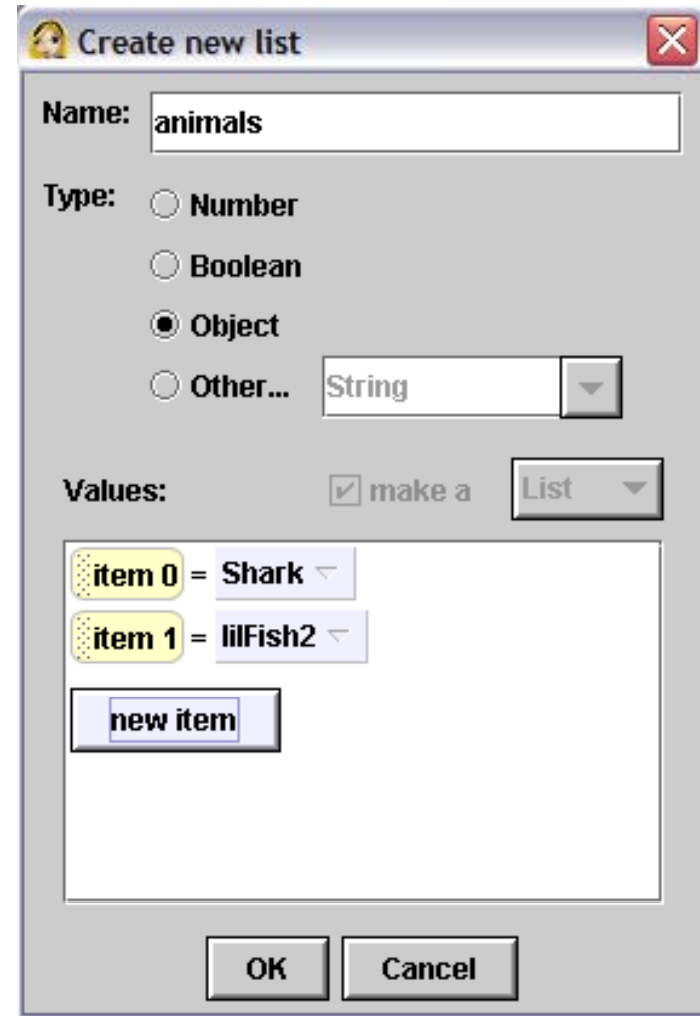
Re-setting the BDE conditional

- Play your world. The while loop only happens once. Let's create a way to reset the conditional
- Click on create new event and select **Let the mouse move <objects>**
- Click on **Any Object** and select **create new list**



An event to move the objects

- Name the list animals
- With type object
- Add the **shark** and **lilFish2** as the new items.

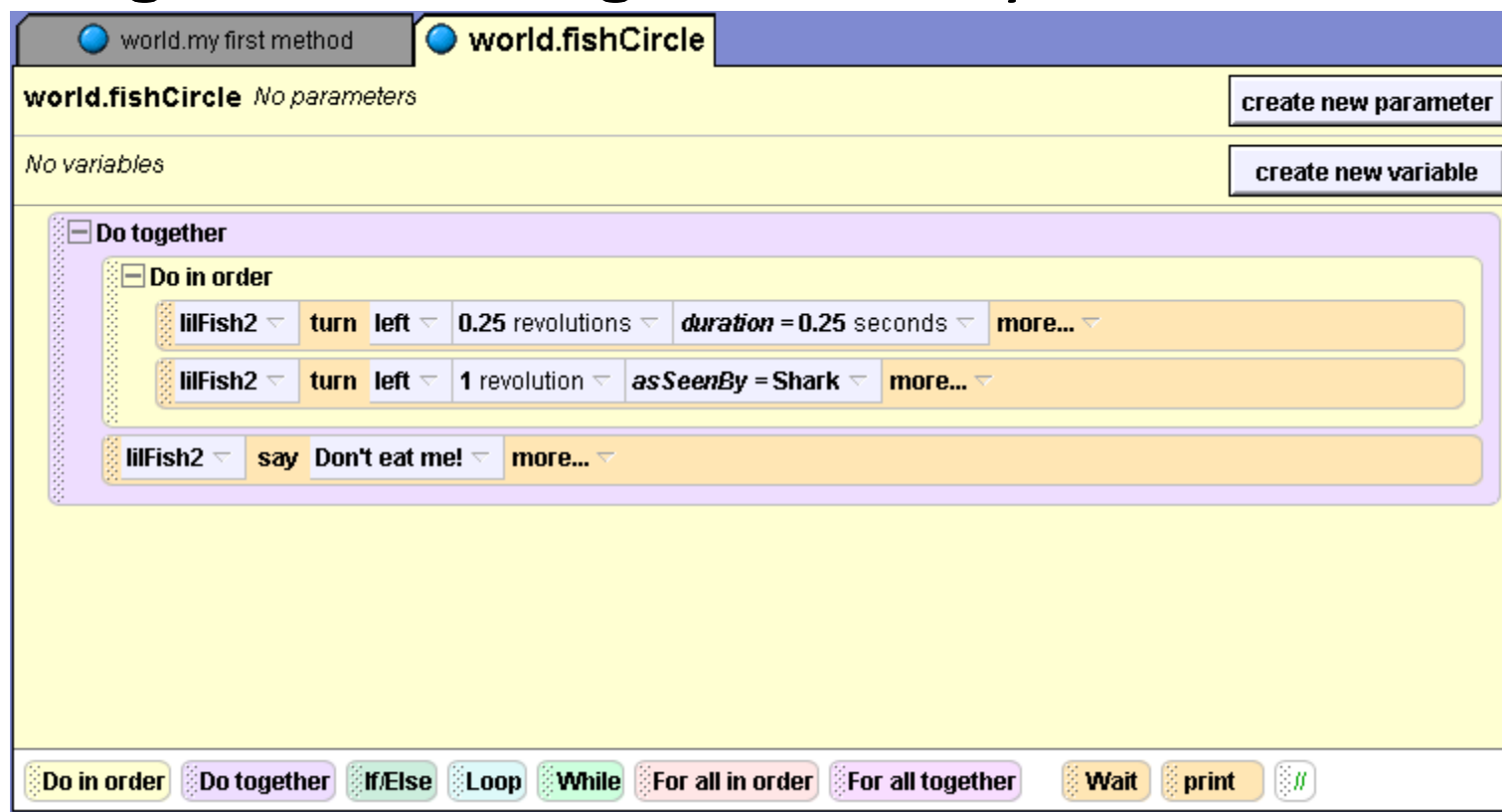


Play your world

- Now when you play your world, after the shark says Gotcha, click on either the **shark** or the **lilFish2** and move it around the screen.
- Then, the BDE loop will happen again.
 - To move the objects up or down, hold down the shift key while you click
 - To change the direction the objects are facing, hold down the control key while you click

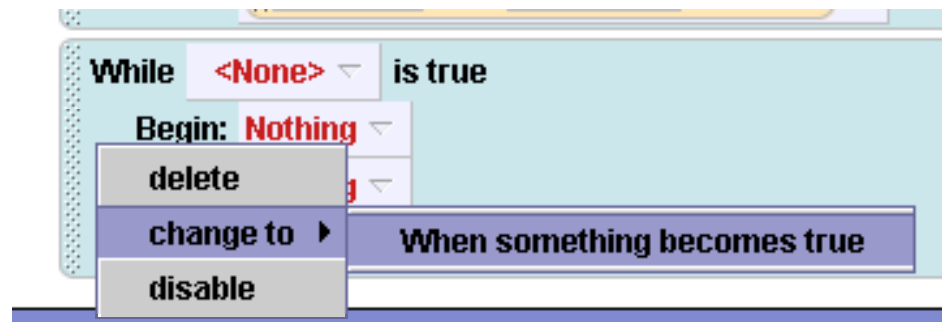
Write a new method

- In the methods tab of the world details panel, click **create a new method**. Name it **fishCircle**
- Drag the following code into your method:



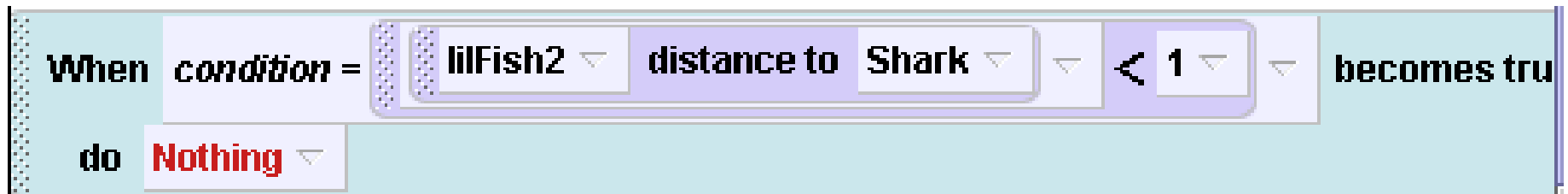
Another event type

- Create new event – **while something is true**
- An empty BDE should appear in your event editor
- Right click on this event and change it to **when something becomes true**



When something becomes true: the conditional

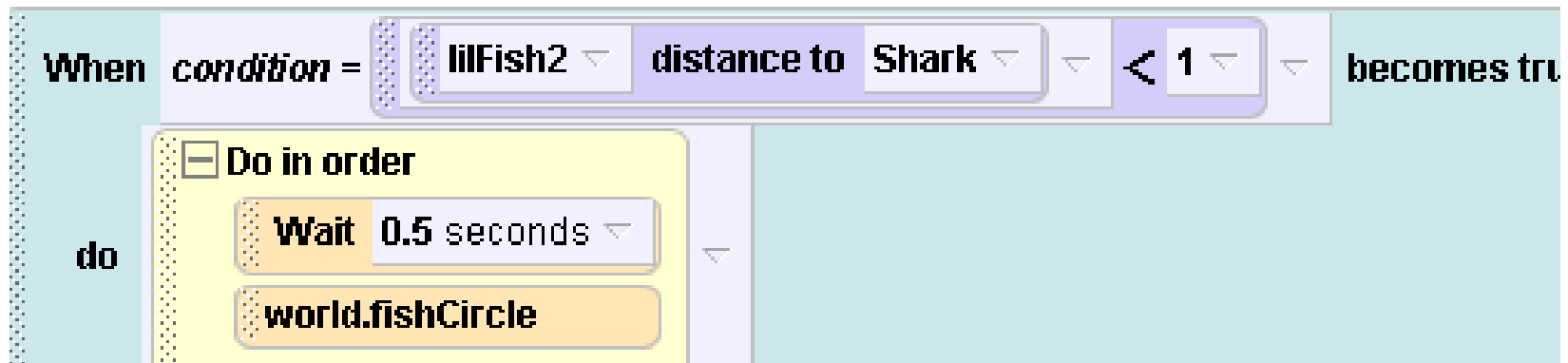
- In our world, the conditional is: when the fish distance to the shark is less than 1 meter
- Add the conditional to your event to look like this:



- This event is useful because sometimes, we only want something to happen once instead of called again and again in a loop.

When something becomes true

- Drag in a **Do in order** on top of the **Nothing** in this event.
- Drag **wait** 0.5 seconds and the **fishCircle** method from the world details panel into the do in order



- Play your world

Recap of BDE

- A BDE is a type of while loop
- The **Begin** will only occur the first time through the loop
- The **During** occurs every time the while loop is being iterated through
- The **End** will only occur the last time through the loop
- In your world, it is useful to have something to reset the conditional of your BDE
- Or, you can change your BDE to **when something is true** when you don't need a loop, then it only happens once